**Sci. 7 (Lab #5)** **Stressed Out !!!**

**Name \_\_\_\_\_\_\_\_\_\_\_\_**

**Class Code\_\_\_\_\_\_\_\_**

**Problem:** What kind of Forces Stress Structures, and Can we Measure it?

**Materials**: Masses, Bucket, Marshmallows, Towel **(Textbook – pg. 310)**

**Variables:**

Manipulated: (only thing to be changed) **the type of Force used**

Responding: (what will probably happen) **how the structure reacts to the force applied**

Controls: 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hypothesis:** I think that: (**a** – squishing + bend)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(**b** - towel twisting)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(**c** – tug-o-war)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Procedure: (A) – 3 Marshmallows, 2 markers, Ruler**

1. **Collect 3 Marsmallows** and draw a grid/checker pattern on them using markers. Measure the squares to get an idea of the average size.
2. Squish the first one. Draw, Describe, + Measure the new size of the squashed Squares.
3. **Marsmallow 2** – Hold at both ends and gently pull outwards. Record info on Chart.
4. Hold same marshmallow and gently bend ends up. Record info on chart.
5. Hold same marshmallow on tabletop and bend one side over the edge. Record Info.
6. **Marshmallow 3** – Gently twist in opposite directions. Record information on Chart.

**Observations:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Action** | **Grid Diagram** | **Description of Grid Changes** | **Type of Force (s)** |
| **Squishing** |  |  |  |
| **Stretching** |  |  |  |
| **Bending Both Ends Up** |  |  |  |
| **Bending 1 end Down** |  |  |  |
| **Twisting** |  |  |  |

**Procedure: (B) - Towel, 2 buckets, Large Graduated Cylinder**

1. Soak your towel. Once it has stopped dripping, squish as much water as you can into your 2nd bucket.
2. Meaure this squished water + record it.
3. Soak towel again. This time twisting to get as much water out as possible.
4. Measure again and record the information.

**Observations:**

|  |  |  |
| --- | --- | --- |
| **Wet Towel Action** | **Water Received (mL)** | **Type of Force** |
| **Squished Towel** |  |  |
| **Twisted Towel** |  |  |

**Procedure: (C) – Bucket, Masses, Newton Force Meter, 2 Samples of Thread (30 cm each)**

1. Set up bucket and thread as shown on **pg. 312**
2. Record on the chart the force (N) necessary for the thread to break.

**Observations:**

|  |  |  |
| --- | --- | --- |
| **Wet Towel Action** | **Force (N) Breakage** | **Type of Force** |
| **Thread #1 -** |  |  |
| **Thread #2 -** |  |  |

**Conclusion:** After completing this experiment I can now say that...

(a)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(b)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(c)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_